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MONTHLY REPORT OF THE OFFICES OF FOREST EXPERIMENT STATIONS AND DENDROLOGY

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Reports
Monthly

MONTHLY REPORT

OFFICES OF FOREST EXPERIMENT STATIONS AND DENDROLOGY

July, 1925

FOREWORD

(From the Report of a Committee of the Agricultural Experiment Stations given at an annual meeting of Agricultural Experiment Stations: prepared by R. W. Thatcher. Two additional statements of the Committee will be presented in later issues on "Advantages of a Program of Work," and "The Preparation of a Program of Work.")

Station Organization and Policy

Your committee has decided to present a discussion of the desirability of a general plan or program for the activities and develop- of each individual station. Several directors have already been led, either by force of circumstances or as a result of a conviction on their part of the wisdom of such a procedure, to outline a fairly definite program for the development of their station's work over a period of years. Their experience points the way to what your committee believes to be a desirable plan to be followed by most, if not all, of the individual stations.

To a considerable extent the plans of the several stations in the past have necessarily been of short range, reflecting immediate demands or response to temporary conditions. Often, too, individual preference of investigators has played a large part in shaping the lines of activity of the station. The nature of the problems which the stations now have to meet is such as to require looking further ahead and making careful preparations, as well as assuring continuance of the work. Of course there must always be provision for meeting emergency questions as they arise, and the trend of investigations can not be foreseen in detail; but this need not make the program of a research institution fortuitous or fragmentary in its larger aspects or haphazard in its planning.

Hence it seems to be both pertinent and desirable for individual experiment stations to consider carefully what they ought to attempt to contribute to the progress of agriculture in their own States and in the nation over a ten-year or twenty-year period. Even though there can be no time limit placed on research projects, and the progress of investigation or the nature of general agricultural developments can not be prophesied, it may, nevertheless, be feasible to set a goal and to shape permanent plans in accordance with the object in view. Furthermore, the time has come when no single station can hope to attack adequately all the many and difficult problems with which the agriculture of a given region is confronted, and the program of any given station ought to take into account the activities of other stations in the region. This can be successfully done only if each of the several stations concerned has a fairly definite program mapped out for its investigational work.

Evidently such a program can not and ought not to be the product of a single man, but should enlist the assistance of experts in many lines to provide as nearly as possible a complete survey of the situation which the station has to face and the needs which it should fill. With this as a background, the director should be able to weigh recommendations and give proper proportions to the various features needed in the framing of a developmental program. The assistance of the farming constituency of the activities, if not, indeed, even to the functions of Federal and State government, can hardly be overestimated.

Further, the preparation and submission of such a program to the consideration of organized associations of farmers within the State affords an opportunity for constructive criticism of station work by intelligent and experienced farmers who are to be the users of the results of the station's investigations, which is of the utmost advantage to both the people of the State, the leguslature, and the station officials.

FOREST EXPERIMENT STATIONS

Washington

After completing his exhaustive and monumental manuscript upon "A National Policy for Forest Research," Mr. Clapp left for a vacation to recuperate. It is hoped, because of the interest in research generally, to have this published in some form. After taking a few weeks' leave, Mr. Clapp plans a swing around the circle to the stations and Laboratory, visiting all Districts except possibly District 4. He plans to return to Washington about November 1.

Mr. Shepard spent practically the entire month in the field at the Northern Rocky Mountain Station, going over the work of the Station with Mr. Weidman, particularly at Savenac Nursery and the Priest River Station. While there he demonstrated his ability as a fire fighter. After a short vacation in New England Mr. Shepard will return to Washington early in August.

--Messrs. Bruce and Reineke spent the first part of the month at the Lake States going over the jack pine yield study both in the field and office. At the Northern Rocky Mountain Station they spent most of their time with Mr. Weidman in the field going over the white pine yield and volume table studies. Mr. Bruce will return to Washington and Mr. Reineke will continue on to the Pacific Northwest Forest Experiment Station.

The Investigative Program for 1925 appeared during the month, and has been distributed widely both in this country and abroad. Copies have been sent to state and federal foresters, schools, cooperating agencies, and to a number of foreign experiment stations.

The preparation of an "Administrative Guide" to bring together the principal instructions scattered in numerous letters and other places and to supplement the Manual is being compiled and is now almost ready for mimeographing. It will be prepared in such shape that new sheets may be added from time to time as needed.

What is believed to be a record in publications has been established by the recent publication of 40,000 copies of "Fire and the Forest" by Show and Kotok. The manuscript was only three months en route after being sent the Department. This was made possible by some fine cooperation on the part of numerous people together with the help of several breaks in our favor. The circular was delivered to us within a few days of the promised date, a brief delay being due to the plates. Efforts to cut down the time required for publication of badly needed papers are occasionally crowned with notable success.

Measurements

About half of the time of the Section of Forest Measurements has been spent upon the Southern pine growth study, and 30 per cent on the Western yellow pine volume table study.

Tabulator

The demands of the bureau of the Budget for immediate cost figures has taxed the capacity of the tabulating section to the utmost and the summary of the last half of the 1925 fiscal year was put through in record time. Several other rush jobs for the stations were put through as the opportunity offered. The latter were, however, small pieces of work such as multiple correlations and straight sortings. Additional work upon the lumber distribution and log price studies was completed for Boyce in Economics.

Library

Miss Stockbridge left for her vacation in the West the middle of the month, the work of the library being handled by Miss Meynes. The Senate Committee on Public Lands continue to request information regarding uses and kinds of lands in the National Forests.

In July the library loaned 949 books and periodicals, and 133 members of the Service and others consulted the library in person. There were 106 books and articles indexed for the card catalogue during the month.

EDITOR'S OFFICE

"Is It Good English"

This title is also the title of an engaging book by "John O'London," editor of "John O'London's Weekly," a British publication. If "John O'London" is not a pseudonym, it is certainly ideally bestowed on its owner, who, so labeled, could hardly have avoided running a British popular weekly if he had wanted to. In his foreword to this book the author quotes from the first of all English grammarians, Lindley Murray, American-born Quaker, a passage on porspicuity that commends itself to all writers, scientific or otherwise, as follows:

> "Perspicuity is the fundamental quality of a style: a quality so essential to every kind of writing, that for want of it nothing can be done. It is not to be considered merely as a sort of negative virtue, or freedom for defect. It has higher merit; it has a degree of positive beauty. We are pleased with an author, and consider him as deserving of praise, who frees us from all fatigue of searching for his meaning; who carries us through his subject without embarrassment or confusion; whose style flows always like a limpid stream, through which we see to the very bottom . . . Whatever a man conceives clearly, he may, if he will be at the trouble, put into distinct propositions, and express clearly to others, and on no subject ought any man to write, on which he cannot think clearly."

If this be true, we are brought to the interesting conclusion that the writing of reports is not merely for the purpose of conveying results of experiment to the public. It is perhaps equally for the purpose of finding out whether the investigator has contributed the leaven of clear thinking to the lump of fact.

Several examples of a certain muddiness of style have lately come across the desk. I select examples from a manuscript now on my desk, not in prejudice of any one author, but merely because they are easiest at hand:

> "Broadcasting is the cheaper method, requiring less time in soil preparation and sowing, the space is more completely utilized, and the cost of weeding, watering, and general care is less."

> "The seeds are scattered broadcast for three reasons: (1) The little difference in germination and survival at the desirable shallower depths of sowing; (2) the tendency of broadcasting to eliminate the weakest plants; and (3) broadcasting is the cheaper method."

Either these sequences are coordinate phrases, or they are coordinate clauses. In the first instance, the sentence should read: "requiring ..... utilizing ..... and costing" or it should read: "for less time is required.....the space is.....and the cost of.....is." In the second instance the correct expressions are likewide obvious; either: "Little difference is evident in.....the tendency of broadcasting is.....and broadcasting is." or "The little difference.....the tendency.....and the lower cost of...." It is astonishing, not that an author can write these muddled sentences, but that he can read them over afterwards and not have his teeth set on edge by them.

Here is another example, not verbatim from any manuscript, but exactly in the manner of expressions that have been encountered:

> "The chart indicates where the plots for this study were located, but which were abandoned later."

A nameless, fatherless relative pronoun like this is a disgrace to any report, and the fact that it is found consorting with an irrelevant conjunction does not improve its standing. "And which" and "but which" have their proper uses when they can be legally accounted for; not otherwise.

"Is it good English?" is a good question for every writer to ask himself on every page. "Is it the right word?" is also salutary self-dicipline for the writer. On the subject of the right word, John O'London lists several examples of what, he feels, is seldom if ever the better word. To these I have appended a few of my own. Do not write:---

Case for fact.
Balance for remainder.
Nature for character.
"To a degree" for excessive.
Realize for obtain.
Claim for assert.
Would seem for seems.
"Of a pronounced order" for unusual.
"With regard to" for concerning.
Commence for begin.
Donate for give.
"Take action" for act or do.
Materially for largely.
Prior to for before.
Partially for partly.
Issue for question.
Parties for persons.
Different to for different from.
Somewhat (or quite) unique for unique.
Emphatically for undoubtedly.
Anticipate for expect.
Individual for person.
Ascertain for inquire or find out.
Endorse for approve or agree with.
Less for fewer.
"In the vicinity" for nearby.
"Try and" for try to.
Amount for quantity.
Secure for obtain.
"Almost always" for nearly always.
Aspect for slope.
Embrace for cover.

As a help to the stations in the preparation of their reports and articles, there has been sent them a copy of Hart's "Essentials of Prose Composition." A careful perusal of this, coupled with a struggle to turn out high-grade work similar in nature to that indicated(both by the budding as well as the authors in full bloom) will assist materially in

better written manuscripts. The book is interesting enough for just reading aside from its study in the art of writing.

DENDROLOGY

New York Parks Council

The New York State Parks Council is holding a series of meetings at the headquarters of the various state parks, and will continue until all have been visited. The object of this survey is to promote a uniform development throughout the whole system of state parks. The act creating the Council provides that local directors of parks automatically become members of the State Council. The act also provides a fund which is to be expended in the purchase of additional park land, etc.

A meeting of the Council was held at Letchworth Park and attended by about 20 representatives. Sudworth explained to the Council the forest and arboretum features of Parks.

Trees in District of Columbia Destroyed by a Street Railway

The Washington Electric Railway Company recently without legal authority cut the tops out of some 25 shade trees in Washington, bordering their car line but on private property. The Company requested advice as to what the trees are, what irreparable damage was done the trees, and what the value of the trees is. The owner of the trees is suing the Company for $5,000 damages. Most of the trees mutilated are Eastern Red Cedar, of symmetrical growth, and ranging from 30 to 35 feet in height and about 10 inches in diameter. By judicious pruning the hardwoods can, within a few years, be brought back to acceptable form without loss of any of them.

All the cedar trees are likely to die. The owner has the right to demand replacement of the trees, which for 10 of them would cost the Company about $2,500 together with the cost of pruning and rehabilitating the oaks, about $200.

During the last 50 years, damage suits brought for the illegal destruction of shade trees have yielded owners from $25 to $500 per tree.

Federal Horticultural Board Activities

A difficult administrative problem has arisen between the Texas State authorities and the Federal Horticultural Board in maintaining quarantine restrictions for another year on the movement of cotton lint out of two districts in north-central Texas, found three years ago to be infested with the Pink Bollworm. The Board immediately quarantined the State which prevents interstate movement of cotton only from those sections, provided the State authorities cooperate with the Board in seeing to it that cotton be not moved interstate except when the raw lint is ginned by machines equipped with heat-sterilizers. The heat kills all Pink Bollworm larvae within the seed.

In the Board's judgment it is desirable to continue this safeguard in these districts for another year in order not to jeopardize the safety of the whole cotton belt east of Texas not yet infested, and also to protect the large area of cotton culture within the State. Neither of these dangers appear to be appreciated locally.

The Governor of Texas has recently approved a recommendation of the State Secretary of Agriculture to rescind the cooperative arrangement on the part of the State with the Board and to allow cotton to move out of the North Texas districts without being ginned in machines equipped with heat-sterilizers. Hope is not yet abandoned of inducing the Governor to restore the cooperative arrangement for another year. If the return of the cooperative arrangement can not be effected, the Board will not for the want of sufficient funds attempt to hold a quarantine on the whole State of Texas to bottle up its cotton. However, if the Board has to give up its cooperation with Texas, it is morally certain that all of the other cotton-growing states, now uninfested, will immediately quarantine Texas in order to protect their own cotton industries.

LAKE STATES FOREST EXPERIMENT STATION

There has been comparatively little new development during this month. The major projects have been continued.

The jack pine yield tables were checked in the field and in the office by Donald Bruce and Reineke. Except for a further test of the volume tables as to whether there should be one table for the entire region or several regional tables, the yield study was found satisfactory and will soon be available for publication. Any change in the volume table will not affect the yield tables.

The study of the comparative cost and lumber yields from trees of different diameters is now fully organized and is developing smoothly. This study was also visited by Donald Bruce and the men in the field had the benefit of Bruce's experience in studies of this character. Three men from the Station are engaged in this study, Koroleff, Brown and Gevorkiantz. Several changes had to be made in the tentative working plan and probably further changes will be necessary before the mill end of the study is completed. The work is conducted cooperatively with the individual lumber companies. Three other mills have already expressed a desire to enter into this cooperative arrangement, two in Wisconsin and one in the Upper Peninsula of Michigan. No decision has yet been reached as to the location of the second timber operation at which the study will be made.

Zon spent the greater part of July in Michigan. A Conservation Council has been organized in Michigan, consisting of delegates from the different organizations interested in Conservation. This, it is hoped, will work for the more effective development of forestry and the whole conservation policy.

In the Upper Peninsula of Michigan large areas of open swamp land have been drained, in one place a tract of over 42,000 acres. These lands, however, were a failure in the agricultural development and remain idle. The question has been raised whether drained peat land is adapted to timber growth. One large owner of such land is anxious to enter into cooperation with the Experiment Station for testing out a number of species on peat land, with or without treatment of the peat. While tree planting on drained peat lands is a new problem in this country, it has received considerable attention in the northern European countries. It was with this purpose in mind that Zon, in company with E. G. Amos, the County Agent Leader for the Upper Peninsula of Michigan, and George E. Bishop, the Secretary of the Upper Peninsula Development Bureau, visited the Seney Swamp, near Seney. No decision has yet been reached as to the part which the Experiment Station will take in this cooperative offer. On the one hand, it is a distinct phase of our comprehensive study of swamp forests. On the other hand, it may be a study that may prove too far in advance of the actual needs of the region. Information, however, on tree planting on dry peat lands is needed and is desirable, considering the many inquiries of what to do with such land, both in Michigan and Minnesota. At present they lay bare and idle and are a great fire menace. Dean Shaw of the Michigan Agricultural College agreed to furnish $300 and the loan of their agricultural engineering expert for ascertaining the cost of superficial drainage in swamp forests as a means of improving timber growth. This phase of our study will probably take place some time in the fall. Similarly, the Agricultural Department of the University of Wisconsin is also willing to enter into such a cooperative study. No definite plans have yet been made for it.

The Forest School of the University of Minnesota has obtained Dr. Henry Schmitz of the University of Idaho for its head. A number of conferences have been held between the Station and Dr. Schmitz regarding the research activities of the Forest School.

CLOQUET FOREST EXPERIMENT STATION

The study of the birch and aspen type was begun early in the month of July. Probstfield is in the field at present with a crew of two men.

A one-half acre thinning in jack pine was completed. This thinning was in the same type of stand as that thinned last year. Last year the aim was to leave about 600 trees to the acre or about a 75 per cent thinning. This year the aim was to leave 1200 to the acre or a 50 per cent thinning.

During the last few days of July the Station participated with the companies in town in putting on a forestry exhibit at the Exposition of Progress at Duluth. This was a noteworthy event because the entire idea of the exhibit was to educate the people to the possibilities of forestry from a commercial standpoint. No attempt was made to advertise any firm or product. The complete story from the seed to the sawlog was shown. The part of the exhibit which was put on by the Station consisted

of a miniature nursery showing the development of the stock from the seed, through transplanting and field planting. Miniatures of all the tools and equipment used in the work were on hand. Methods of lumber manufacture were shown and the degree of utilization of slabs and edgings and their manufacture into laths, pickets, boxes and crates were shown. Methods of paper manufacture and materials used and steps in the making of balsam wool and other products were also shown. There was also some propaganda work concerning the effect of forest fires. A great deal of interest was shown by all people who saw the exhibit.

A rather interesting educational experiment was tried out on the Rotary Club at the request of one of the members. Hansen gathered branches of 25 different trees found in this region. These were all numbered and the contest consisted in identifying the specimens. The highest grade obtained by anyone was 57 per cent, most of them being around 25 per cent and 30 per cent. This would seem to indicate that considerable education is needed to acquaint the people with the things of the forest.

Considerable improvement work has been done during the past month. A number of buildings have been painted and a number of roads gravelled and brushed out.

The Station was visited during the past month by Dean Coffey and Vice-Director Boss of the University Farm.

NORTHERN ROCKY MOUNTAIN FOREST EXPERIMENT STATION

Field work on the white pine yield and methods-of-cutting projects was started in the middle of June. Haig, Marshall, and two assistants comprise the field party which is traveling in our truck. An itinerary has been laid out covering some 50 old timber sale and private cuttings, as well as numerous young stands reputed to be suitable for yield plots. To date about 35 yield plots have been taken on the Cabinet and St. Joe Forests in 40, 48, 55, 60, and 83-year old stands. In addition two 20-year old cutting areas have been studied. Haig has been absent from the party considerably, reconnoitering suitable sites for the work and twice to join visiting Washington officers for several days.

Shepard reached Missoula June 30 and a few days thereafter left for a three weeks' field trip with Weidman. Tuttle of the Products Laboratory was a member of the party. A day was spent going over Wahlenberg's planting research at Savenac Nursery. Another day was devoted to witnessing the work of the mill scale study conducted by the Office of Products at the Winton Lumber Company mill at Rose Lake, Idaho. A reconnaissance of the proposed experimental center in the Little North Fork drainage of the Coeur d' Alene Forest took three days. This proved to be a very successful trip in which the party made a good cross-section hike through the two townships, approximately which it is planned to recommend as satisfactory for an experimental

center in the white pine type. It is to represent the southern part of the type, with the present Priest River Branch representing the northern portion.

Following the trip on the Coeur d' Alene Forest, Shepard, Tuttle, and Weidman went to the Priest River field station. Here some sample plot work in thinning was barely started when all of the available men at the station were called upon to help out in the serious fire situation prevailing on the Kaniksu Forest. One lightning storm set 45 or 50 fires, a number of which quickly grew to considerable size. Altogether six Research men went on fires and were kept until the fires were trenched 10 to 12 days later.

A few days after Shepard and Tuttle left, Bruce and Reineke arrived to go over our yield and volume table studies. Weidman and Haig spent about four days in field conferences with them on various sample plots on the Coeur d' Alene. Bruce, Reineke and Weidman then proceeded to the Priest River Branch.

Gisborne attended the annual meeting of the Pacific Section of the A.A.A.S. which was held at Portland, Oregon, June 18 to 20, this year. He presented a paper on cyclic fluctuations in spring rainfall in relation to forest fire conditions. Gisborne spent most of June and July at Priest River placing duff hygrometers and other instruments at several fire weather stations on the Nezperce, Lolo, Flathead, and Bitterroot Forests.

Kempff spent three weeks in Missoula in computation work on the thinning project. The work covered eight thinning plots, four established five years ago and four established 10 years ago. These were remeasured last fall. As no compilation had previously been done, all the diameter classifications, height curves, basal areas, cubic and board foot volumes had to be computed from the very beginning.

Wahelenberg installed new tests as parts of the several nursery and planting experiments in June and marked individual trees and test units.

The Northern Rocky Mountain Station was very glad to have a visit of a few days from Bates early in June. He stopped one day on the Deerlodge Forest to see District 1 lodgepole pine, one day at Missoula, one day at Savenac Nursery, and one day at the Priest River Branch. Our regret was that he could not spend a much longer time with us.

PACIFIC NORTHWEST FOREST EXPERIMENT STATION

McArdle has been in the field the entire month with the Douglas fir yield study crews. During July the two crews, each of three men, measured 146 plots comprising 105 acres and, in addition, calipered 185 chains of empirical strip cruise. Finding stands of the ages and sites needed is proving to be no small task. Stands of second-growth fir over 100 years

of age have in many cases been turned to lumber by the multitudinous small sawmills of the region. Stands as young as 50 years are now being cut for these mills.

Isaac spent the entire month on the Douglas fir reproduction study on cut-over lands. A number of private holdings in representative regions of Washington and Oregon were visited and a study made of recent operations upon which accurate cutting and fire history could be obtained. The source of seed and rate of establishment of stands after burning are the outstanding phases of the work being covered. The introduction of forage grasses, a practice being followed by many logging companies, gives promise of further complicating the problem.

Dr. Raymond Kienholz has been at Wind River concentrating on the Douglas fir natural reproduction study, chiefly through the very detailed mapping of permanent transects. Mr. Ingram of Grazing has cooperated in some of this work as one phase of this study is the handling of sheep grazing on reproducing logged-off land.

Simson's month was devoted practically entirely to fire studies, the last half of the month in a very direct and practical way, for on the evening of the 16th the Wind River Lumber Company's slashing caught fire and now after two weeks is not wholly subdued. The fire burned over the fresh slash, last spring's burn, last fall's burn, several thousand acres of uncut timber, five donkey engines, etc., etc. Steep mountain sides, overmature timber, and many snags made almost unsurmountable difficulties in controlling the fire.

Just at the end of the month another fire broke out, this one within a mile of the Nursery and Station, and swept over 200 acres of older logged-off land, but it was effectually stopped in two days. From these two most regrettable fires we hope research can draw some lessons which will help to prevent and suppress others.

Mr. R. H. Westveld joined the permanent force July 1. He graduated in forestry from Michigan Agricultural College in 1922, had two years as forest assistant in District Three, and then spent this past year at the Yale Forestry School where he received his master's degree. He is a brother of M. Westveld of the Northeastern Station.

He has been assigned to a study of brush disposal in the yellow pine region and after a few days in the office went to central Oregon where he has been since studying by temporary plots, cut-over lands upon which various methods of logging and slash disposal have been practiced. The purpose of this study is to find out what results follow various methods of brush disposal, with a view to devising for both private and National Forest applications the treatment which will ~~give best results~~ give best results from the silvicultural, protective and economic standpoints under the varying systems of logging used in that region. It appears that brush disposal practice should be more elastic and should be varied according to the amount of advance reproduction, the topography, combination of species, logging methods, etc.

DISTRICT 5

After seven years in the hands of the Bureau of Plant Industry, the Feather River Experiment Station returned to our control on July 1. The transfer was made on June 30 and the Deputy Supervisor of the Plumas installed as temporary caretaker.

The last of June was memorable for the delivery of the new roadster-truck, and the trading in without regret of the old Ford at the high valuation of $40 after six years' service(?).

On July 1 Show and Dunning went to the Tahoe where two weeks were spent in measuring and analyzing even-aged stands of yellow pine in an effort to determine what a normal or fully stocked stand really is. Quite evidently we have measured as normal many plots that are in reality overstocked. The maximum yield at age 60, with the height of dominants at 130 feet, is found with about 140 dominants per acre, giving a stand rather open in appearance.

After a few days in the office, Show and Dunning journeyed to the Plumas on July 18, where the balance of the month was spent. Several yield plots were measured on a lower site quality than that on the Tahoe. An extensive series of tests - about 200 - were made on smoker fires. An Evinrude pump was used to drive a Ford fan, thereby obtaining fairly high wind velocities. The supposedly deadly cigarette failed to perform, even in oven-dry material, except on rotten wood. Pipe heels readily started fires in most air-dry material with very slight wind. Cigars failed to perform at all. Quite evidently most "smoker" fires are set by unextinguished matches rather than tobacco.

While at the Experiment Station a critical reduction in the flow of water in the spring necessitated drastic action. Consequently the alders, willows and maples lining the gulch above the intake were cut, and the flow increased nearly 100 per cent.

SOUTHWESTERN FOREST EXPERIMENT STATION

During the month of June Krauch finished establishing a series of sample plots in Douglas fir on the Lincoln. These plots represent four methods of cutting. Practically no reproduction of Douglas fir has taken place in this vicinity since 1916. Large numbers of seedlings of Douglas fir, white fir and blue spruce started a year ago, but examination this spring showed that practically all died during the winter.

Early in July the station was visited by Dr. Craighead of the Bureau of Entomology and Dr. Kraus of the University of Wisconsin. Pearson accompanied them to the Kaibab where the Bureau of Entomology has an insect control camp. The timber is being killed in patches by the Black Hills bark-beetle. Under natural conditions these patches would restock, but excessive damage by deer and to some extent by wild horses threatens to

destroy reproduction. Previous reports of overstocking by deer are not in the least exaggerated. Brief examinations of yellow pine on the Dixie and Powell indicate far less damage to reproduction by sheep grazing than occurs on the Colorado Plateau in Arizona. A probable reason for this difference is that in the localities visited on the Dixie and Powell we have mainly a browse range, while on the Arizona Forests where grazing damage is serious we have a grass range.

Dr. Taylor's work on the porcupine continues to bring out important information regarding the habits of these animals. The thought has occurred to the station that if porcupines had always been as abundant as at the present time we would have but little yellow pine saw timber in many parts of District 3. They probably have increased greatly during the past 20 years. There is reason for this. Even since the grazing became intensive, stockmen aided in recent years by the Forest Service and the Biological Survey have carried on a relentless warfare against mountain lions, bobcats, coyotes, and other enemies of the porcupine. Naturally the porcupine should thrive under this protection. Just another case of upsetting the natural balance.

ROCKY MOUNTAIN FOREST EXPERIMENT STATION

Bates returned from Utah July 12. Two or three days were spent at the station preparing lodgepole seed of 1914 extraction for a final test of ability to stand storage, and one day was spent in preparing a brief report on the more recent work with yellow pine cones, in which it has been shown that air-drying in sheds is perfectly feasible and that the cones may be expected to open fully in three to five months, if given 3-4 square feet of surface por bushel of cones. Air-dried seed, however, on the average did not show higher germinative capacity than that extracted by means of a strong draft of hot air.

Roeser's time during the month has been largely expended on records of the management of the station forest, on the routine of soil-sampling, seed testing and the transpiration test, and on visitors. The latter consume an incredibly large amount of time even when the average number is only 12-15 per day.

An extremely interesting 24 hours was spent with Dr. E. J. Kraus of Wisconsin University who visited the station July 28-29.

Roeser will be engaged on much the same lines in August as in July, except that the Douglas fir reproduction counts (Mc-4) will replace the more general management work as the major activity. It is now planned to complete the second stage (final Cut) of the shelterwood plot in this experiment and to log it off on the winter's snow.

Bates will leave August 2 for a general inspection of past and prospective investigations in southern Colorado, with a view to deciding on centers of concentration for the future. It would seem that all of the southern Colorado types could be reached from one general center, with a subsidiary point to cover such work in yellow pine as is necessary to supplement that done in District 3. This examination will take practically the entire month.

SOUTHERN FOREST EXPERIMENT STATION

General

Field work was very largely confined to the naval stores project. Forbes returned to New Orleans after an absence of three months. He paid a visit to the Northeastern Station and the Harvard Forest at Petersham and found these three days extremely profitable and inspiring. Three things made a vivid impression upon him at Petersham: the fact that the market for wood is for sawlogs and not for cordwood, and that the Forest has no difficulty in supplying it; that selection cutting in hardwoods is not deemed as good silvicultural practice as clear cutting, even-aged stands being the desideratum; that insects are of such importance as to influence silviculture profoundly. The value of unhurried, continuous work by competent men is also vividly impressed upon the visitor at Petersham.

Protection, Fire

Hine completed the final revision of the report on establishment of the loblolly fire plots at Urania, which led to a study by statistical methods of the comparability of the plots in each series. Since similar questions will come up in connection with every series of permanent sample plots we will lay out, or have laid out, all station members have been giving the matter thought. Some leads have been unearthed, but the study is not yet complete.

Hine and Hadley spent two or three days revisiting some of the semi-permanent fire plots laid out in south Mississippi during the course of last spring's extensive surveys; in general, they found mortality to be surprisingly low, even in the most serious fires.

Measurements

Hadley has been re-working the original tupelo growth data in the light of comments and suggestions from the Board of Review.

In an attempt to correlate crown measurements with the growth of trees released by logging as recorded in the course of our extensive surveys, Hine has returned to the very careful crown canopy maps he made of a loblolly thinning plot at Urania last year.

Management

Shivery spent practically all of his time preparing the maps and assembling the field data on the cutting project at Bogalusa. With the help of students from the Louisiana Forestry Camp, he filled some gaps in his field measurements.

Hine has been working on the second re-measurements of the thinning plots established at Urania by Dana in 1915, and on the figures which he and Munns obtained last winter when they established several additional thinning plots at the same place.

Naval Stores

While Wakeley conducted the routine work at Starke, Wyman made a tour of the naval stores territory of southern Georgia, Alabama, and northern Florida. He saw all sorts of commercial practice, from faces 17 feet high and three and a half inches wide placed on bark bars between earlier faces, to aluminum cups used with wooden tins and gutters. The fire conference at Asheville robbed him of the hoped-for opportunity to reconnoiter naval stores possibilities at Camp Benning and to a lesser degree on the Choctawhatchee Division of the Florida.

Forestation

Our Collaborator, Miss Koch, submitted her report on the germination tests conducted for us last winter and spring. She expects to take post-graduate work at Cornell next year, and may continue work on the germination of our Southern pines.

Protection, Other

The Colaspis beetle, which last year was reported as having defoliated very considerable acreages of loblolly and longleaf pine in southwest Louisiana, has apparently shifted its field of activity to the Florida Parishes of Louisiana and Mississippi. Widespread defoliation has been noted in the Lower Coastal Plain, but very little in the Upper Coastal Plain. Dr. Craighead, who visited Bogalusa, is not alarmed over the situation. Reports from east Texas indicate that the lumbermen are still badly worried over the insect situation

NORTHEASTERN FOREST EXPERIMENT STATION

Field work on the re-measurement of the permanent sample plots established in 1905 and 1906 was completed by Meyer during June. Altogether 119 plots were re-measured, 78 discontinued, and 47 left for future consideration. Working up the records on these plots will be quite a job, which it is hoped to undertake during the coming winter. In addition to the plots being handled by the Forest Service, 87 have been turned over to and are now maintained by Yale, Harvard, Cornell, and the Connecticut Agricultural Experiment Station.

Meyer spent practically all of July in the continuation of the spruce yield study. A survey of New York state showed practically no material there of value for the purpose of the study. The bulk of the work was located near Woodstock, Vermont, where some additional fully stocked plots were secured and a study made of the practical application of normal yield tables to stands not fully stocked. Strips covering nearly 10 per cent of the entire area were run through approximately 1,000 acres of even-aged but not fully-stocked stands of spruce of various ages. One serious difficulty being encountered in the yield study is the determination of site in areas where large trees are not present. Cases have been found where seedlings growing in the open with ample opportunity for development, within a few rods of rapid-growing stands, show very slow growth which apparently can be accounted for only by a sudden change in site.

Westveld completed a re-survey of the permanent sample plots established last year on the White Mountain National Forest in connection with the spruce cutting study. Since then he has taken temporary sample plots on cut-over areas in northern New Hampshire and in central and western Maine.

Behre finished taking the taper measurements on one of the permanent sample plots on the White Mountain Forest, and the last of July left for similar work at various points in the Adirondacks.

Progress on coding the 1924 forest fire records for Massachusetts was made during June, since which time it has been necessary to discontinue the work until fall. A working plan was prepared for the study of the relation of fire hazard to weather conditions, and Stickel left for the Cranberry Lake Camp of the New York State College of Forestry in the Adirondacks, where field work on this project will be concentrated during the present season. The College is cooperating by furnishing certain meteorological equipment and additional duff hygrometers. The season has been so wet that there has as yet been practically no fire hazard. Contributions of $250 from the Empire State Forest Products Association and of $100 from the Northeastern Retail Lumber Dealers' Association have been received for the work. Contributions of $300 and $450 respectively have been promised by the States of Connecticut and Vermont for statistical studies of forest fires, and financial assistance is also anticipated from the States of Maine and New Hampshire.

A preliminary revision of Zon's public requirements report for the Northeast was completed and forwarded for criticism. Dana attended the meeting of the Northeastern Forest Research Council on June 22-24 at Berlin, New Hampshire, and Cupsuptic, Maine. The Council was royally entertained by its chairman, W. R. Brown, and had an exceptionally interesting and enjoyable meeting. Much time was spent in an inspection of various cut-over areas and permanent sample plots established by the Brown Company in a mixed spruce-northern hardwoods forest at the north end of the Rangeley Lakes in western Maine. Fire studies were discussed in considerable detail at the business meeting, and the Station's program approved. Action was also taken by the Council urging the agricultural experiment stations to devote part of the additional funds received under the Purnell Act to investigations in forestry.

APPALACHIAN FOREST EXPERIMENT STATION

The North Carolina Forestry Association held its fifteenth annual convention at the Battery Park Hotel, Asheville, July 10. "An Advanced Program of Reforestation for North Carolina" was the subject of the first address, by Governor Angus W. McLean. This was followed by "A Campaign of Education in Forest Fire Prevention," by Shirley W. Allen, and "Federal Cooperation under the Clarke-McNary Law," by District Forester Evan Kelley. J. K. Johnson, forester for the Great Southern Lumber Company, and W. J. Damtoft, forester for the Champion Fibre Company, spoke on "Forestry on Private Lands," and "The Chestnut Situation in Western North Carolina" was discussed by Robert W. Griffith, of the Champion Fibre Company, and by Frothingham. A spirited extemporaneous address was delivered by N. H. Wheeler. This was only one of a number of highly successful talks by Mr. Wheeler in Asheville, one of which was acclaimed as "the best thing the Asheville Rotary Club ever listened to."

A business meeting of the Southern Appalachian Section, Society of American Foresters, was held at the Battery Park Hotel on the morning of July 11. Twelve members and a number of guests were present. In the afternoon a party of about thirty members and guests of the Section, under the guidance of E. F. McCarthy, visited the Bent Creek division of the Pisgah National Forest. McCarthy conducted the party through a number of sample plots previously established by him on the burned area. The data on these plots - including one tagged pine plot, one tagged hardwood plot, and four others upon which records had been made without tagging - had been worked up for the occasion, and these cases of fire damage were discussed in detail. They will constitute the subject of a special report by the Section. R. A. St. George explained the experiments now being conducted by the Office of Forest Insect Investigations under the direction of Dr. Craighead. Those who made the trip were well pleased with this, the first field meeting of the Section.

The insectary at Bent Creek was practically completed and work on the field laboratory building was begun early in July.

Dr. J. C. Humphrey, who has been assigned by the Bureau of Plant Industry as Forest Pathologist at the Appalachian Station, paid a brief visit to Asheville en route for field work on the chestnut blight in Kentucky. Dr. Humphrey will return to the Station in August.

Oak Study (TS-12)

McCarthy and Averell left for Kentucky and Haasis for Tennessee to be engaged on yield studies and, if opportunity arises, on volume table measurements for the oak study. After a short trip in Kentucky, McCarthy and Averell left for southern Ohio.

Previous study of yield work has shown that pure even-aged stands of oak can be found only where clear cutting has been practiced. Such instances are practically limited to areas clear cut for charcoal wood. Areas in central Tennessee, southern Ohio, northeastern Kentucky and, to a minor extent, in West Virginia are available for such study.

The forest of southern Ohio is generally young and thrifty following earlier cuttings; but where saw timber and ties only have been taken some unevenness exists in the age of the stands. The successive cuttings have tended to create open stands with few suppressed trees. While such second-growth stands are readily managed for tie production, they are not well enough stocked for use in the yield tables proposed. Eighteen well stocked plots were measured south and east of Chillicothe during the month. In Tennessee, Haasis found the oak stands very disappointing; as a result of repeated fires very few stands well enough stocked for yield plot purposes could be discovered.

Cooperative Forest Insect Investigations, Asheville, N. C., 1925-26 (By R. A. St. George)

Through the cooperation of the Appalachian Forest Experiment Station, arrangements were made in April for the Forest Insect division of the Bureau of Entomology to establish a cooperative field station in the Bent Creek section of the Pisgah National Forest, so as to study important forest insect problems applicable to the Piedmont and Coastal Plain regions.

The major problems selected for the present season are those relative to a study of pine insects and those affecting the reproduction of hardwoods. These studies are being conducted by R. A. St. George and A. H. MacAndrews under the direction of Dr. F. C. Craighead.

These investigations are of a more detailed character than any heretofore undertaken, attempting to analyze the environmental factors governing barkbeetle epidemics, especially those relating to the destructive southern pine beetle; the relation of the tree itself to barkbeetle attack and brood development and particularly the effects of drought. Considerable detailed life history work of pine insects is being conducted and a special study is being made of the physiological interrelations from the standpoint of the tree itself. Dr. E. J. Kraus, of the University of Wisconsin, is devoting considerable time to the latter study.

Because of indications of correlation between barkbeetle epidemics and deficiencies in rainfall, a drought experiment was started in an endeavor to reproduce such a condition so as to analyze certain environmental factors relative to such outbreaks. In this experiment, four plots were selected, three of which were trenched and covered with treated canvas, the fourth was not covered and serves as a check. One of the three trenched plots is to be watered after barkbeetle attack, the other two are not to be watered. The main stems of the trees on one of the

latter plots have been caged with wire to prevent barkbeetle attack, those on the other plot are not to be caged and a study is to be made of the effects of insect activities on them. A dendograph was placed on one tree on each of the covered plots in order to measure the reponses of the trees, particularly after barkbeetle attack. The roots have been removed, examined, and returned to the soil in a small area in each of the plots so as to note subsequent development. Atmospheric and soil temperatures, sap density and moisture determinations of the bark and leaves, and precipitation records are also being taken in connection with this study.

Preliminary results obtained so far indicate that there is a higher concentration of sap in the trees on the trenched plots than on the check plot and also a higher concentration now in all of the trees than earlier in the season. Up to the present time none of the trees have been attacked by barkbeetles.

In addition to the above experiment, trees are being girdled and felled in various ways so as to produce different conditions in the trees, and barkbeetle activities are being observed on them. In this connection some very interesting results are being obtained. For instance, some species of insects show a preference for trees which are only in a certain condition, while others select those in which there is a considerable variation in this respect.

Another experiment includes the establishment of observation stations to compare and analyze certain physical factors (climatic and soil conditions) in two contrasting types: - one on a south slope, where southern pine barkbeetle epidemics usually originate, the other on a north slope, where they seldom occur. Observations are being made on the air and soil temperatures, precipitation, humidity, soil moisture, and sap density of several typical species of trees. This is a joint study, involving the inflammability phase of the fire study to be undertaken by E. F. McCarthy.

Results so far obtained indicate that there is a greater range in temperature and humidity on the south than on the north slope. Changes in temperature and humidity often take place sooner on the south than on the north slope.

Sample plots on recent pine and hardwood burns have been established by Mr. McCarthy and the relation of insects to the death of some of these trees are being studied, noting the possibilities of using insects as early indicators of the tree's condition.

Preliminary results of detailed life history studies of the southern pine beetle indicate that, when conditions are favorable, they can successfully establish their broods and mature in recently felled trees as well as in living trees. This is the first time that there has been an opportunity to study the habits of this beetle during non-epidemic

years. Bark counts of a limited number of samples indicate that the emerging broods of this species are much larger than those of the closely related western species.

Because of the extremely dry season (12.23 inches deficiency for Asheville from January 1 to August 6) and the possibility of a southern pine beetle outbreak, timber owners have been warned of the dangers of such an outbreak and have been requested to report the first signs of the fading foliage on groups of trees where there is no evidence of fire or of any other causes. Briefs have been prepared regarding the habits of this beetle and embodying suggestions for its control. In this connection many letters have been received during the past month from the southeastern and southern States. Up to the present time every sample submitted for identification has contained only bark-beetles which usually are regarded as being of only secondary importance.

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